Biological Resources Report
Top of the Pines Project
Pine Valley, San Diego County, California
Tentative Parcel Map No. 20951

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Table of Contents

Section Page

Summary of Findings 1
1.0 Introduction 1
2.0 Methods and Survey Limitations 1
3.0 Site Description 2
3.1 Site Location and Condition 2
3.2 Site Geology and Drainage 2
3.3 Site Climate 4
3.4 Surrounding Land Use 4
4.0 Biological Resources 4
4.1 Vegetation 4
4.2 Sensitive Plant Species 8
4.3 Wildlife 9
4.4 Sensitive Wildlife Species 10
5.0 Sensitive Habitats 14
6.0 Evaluation of Resources and Anticipated Project Impacts 14
7.0 Mitigation Measures 15
8.0 Certification and Qualifications 16
9.0 Bibliography 17

Figures

Figure 1: Top of the Pines Project Location 3
Figure 2. Vegetation Map for Top of the Pines Property 5
Figure 3. View Across Open Mixed Chaparral, Big Sagebrush Scrub, and Dense Mixed Chaparral on Property, with Freeway Cut and Long Valley Peak in Background 6
Figure 4. Stand of Big Sagebrush Scrub Surrounded by Relatively Open Mixed Chaparral 7
Figure 5. Gully with Oaks Alongside Road 8

Tables

Table 1. Field Effort and Conditions 2
Table 2. Top of the Pines Vegetation Acres 4
Table 3. Impacts to Habitat and Required Mitigation 15

Appendices

A Botanical Survey Notes and Plant List
B. Animal Species Documented on the 17-acre Top of the Pines Site
C. Quino Checkerspot Butterfly Protocol Survey Report

Summary of Findings

This Biological Resources Report for the 18.27-acre Top of the Pines project site (Tentative Parcel Map No. 20951) presents the results of vegetation type mapping, floral and faunal inventories, a habitat assessment and focused survey for the federally endangered Quino checkerspot butterfly (*Euphydrias editha quino*) (Quino), and general survey for other listed and/or sensitive species of concern identified by the San Diego County Department of Planning and Land Use (DPLU) as possibly occurring on the property. The property consists predominantly of granitic northern mixed chaparral vegetation, with lesser areas of big sagebrush scrub, coast live oak woodland, and disturbed habitat. One plant species of concern was found on the site, whereas two others may have been undetectable due to exceptionally dry conditions. None of the three species is listed as or would be considered rare, threatened, or endangered. The Quino survey yielded negative results, and this species is unlikely to occur on the site. Several wide-ranging, sensitive wildlife species may possibly utilize or pass through the site, but the site does not provide essential habitat for these species. One nest of the San Diego desert woodrat was found on the site. A gully that provides drainage but lacks wetland or riparian habitat crosses the site. Based on the configuration of site development, a proposed open space easement, and County habitat mitigation ratios, a net mitigation requirement of 7.72 acres is identified.

1.0 Introduction

On behalf of Kappa Surveying Inc., TEC Inc. has conducted a biological resources evaluation and has prepared this Biological Resources Report for an 18.27-acre development property referred to as Top of the Pines (Tentative Parcel Map 20951), in the unincorporated community of Pine Valley, San Diego County. TEC Inc. has been contracted by Kappa to conduct a general biological assessment of the property and to survey for plant and animal species of concern as required by the DPLU. DPLU's Biological Survey Guidelines and Biological Mapping Requirements (DPLU 2002a, b) have been followed in the preparation of this Report.

This report presents the results of vegetation type mapping on the project site, floral and faunal inventories, a habitat assessment and focused survey for the federally endangered Quino checkerspot butterfly (*Euphydrias editha quino*) (Quino), and general survey for other listed and/or sensitive species of concern identified by DPLU as possibly occurring on the property.

2.0 Methods and Survey Limitations

An initial site visit was conducted by consulting biologists John Lovio and John Konecny during December 2005 (Table 1) to assess general vegetation and habitat conditions, map vegetation types, and provide an initial assessment of habitat suitability for the Quino. A floral and faunal inventory was initiated on that date and continued through subsequent site visits. Kappa Surveying Inc. provided a topographic map and grading plan for the site. An aerial photograph of the site was obtained through www.maps.google.com. Vegetation types were delineated in the field on the aerial photograph and transferred onto an electronic version of the topographic map. Survey limitations are as noted below.

Table 1. Field Effort and Conditions

Date	Times (PST)	Purpose	Weather
12/08/05	10:00 - 14:45	Quino checkerspot habitat assessment & general site assessment - inventory	59° to 58° F, 50 to 100% cloud cover, wind 0-1 mph, NE
4/18/06	08:30 – 13:15	Quino checkerspot survey & general site inventory	60° to 67° F, clear, wind gusty, 3-10 mph, NE
5/1/06	09:00 – 12:30	Quino checkerspot survey & general site inventory	82° to 79° F, clear w/ 20% haze, wind, 0-5 mph, W to SW
5/13/06	08:00 – 17:00	Floral inventory	Seasonably warm and dry
5/15/06	08:45 – 12:45	Quino checkerspot survey & general site inventory	81° to 80° F, 90 to 80% high clouds, wind 1mph, E, to 3-5 mph, W
5/29/06	06:30 – 10:00	Quino checkerspot survey & general site inventory	68° to 74° F, clear, wind 2-5 mph, W
6/3/06	08:00 – 17:00	Floral inventory	Seasonably warm and dry
6/12 /06	10:30 – 14:00	Quino checkerspot survey & general site inventory	79° to 80° F, clear, wind gusty, 3-10 mph, SW
7/18/06	09:15 – 12:45	General site inventory	93° to 90° F, 10 to 50% clouds, wind gusty, 5-10 mph, SE to 5-8 mph, W
11/2/10	09:00 – 15:00	Vanishing buckwheat survey	88° to 75° F, clear, wind gusty, 11-18 mph, E

3.0 Site Description

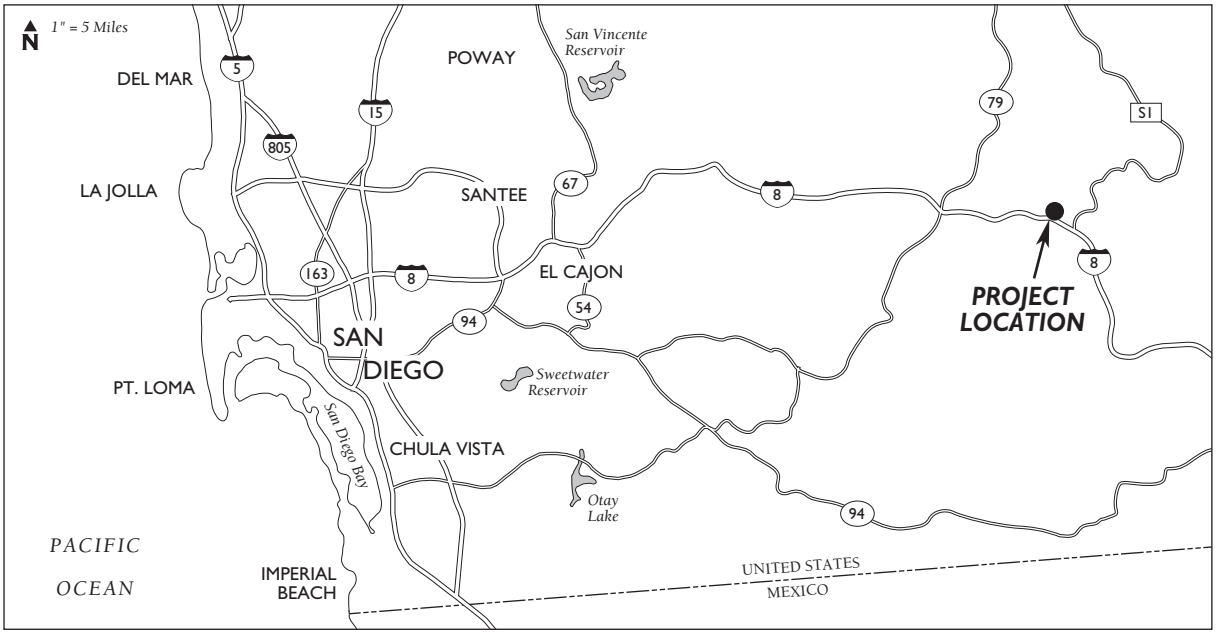
3.1 Site Location and Condition

The project site (Figure 1) is an 18.27-acre, somewhat irregular, east – west oriented rectangle comprising nearly all of the north half of the SE quarter of the SE quarter of section35,Township 15 South, Range 4 East, San Bernardino Baseline and Meridian. It is bordered to the south by the easement of Interstate 8, to the east by Pine Valley Road, and to the north and west by private land with sparse residential development in a matrix of natural vegetation. The site is currently undeveloped, with the exception of a curving, mostly unpaved access road that runs through from east to west.

3.2 Site Geology and Drainage

The site elevation ranges from 3,750 to 3,950 feet above sea level. Site topography consists of two low hills in the western two-thirds and a terrace in the eastern third. Aspects are generally south, although some north-facing slopes occur along the northern site edge. The majority of the site drains to the south and east and it includes part of the watershed of a short, but deep gully that runs generally eastward through the southern portion of the site and is culverted to the east beneath Pine Valley Road. No extensive rock outcrops occur on the site.

The soils on the property are mapped as Bancas stony loam, 30 to 65 percent slopes (USDA Soil Conservation Service 1973). This soil is derived from granitic rocks and occurs widely on upland slopes in the mountains of east-central San Diego County. This soil is a well-drained stony loam with a clay loam subsoil, underlain by quartz diorite and mica schist. The soil is shallow, with weathered rock typically encountered 19 to 36 inches (0.5 to 0.9 m) below the surface. It is not known to support unusual concentrations of rare or endemic plants. Typical uses of the soil are as watershed, range, wildlife habitat, and residential development.



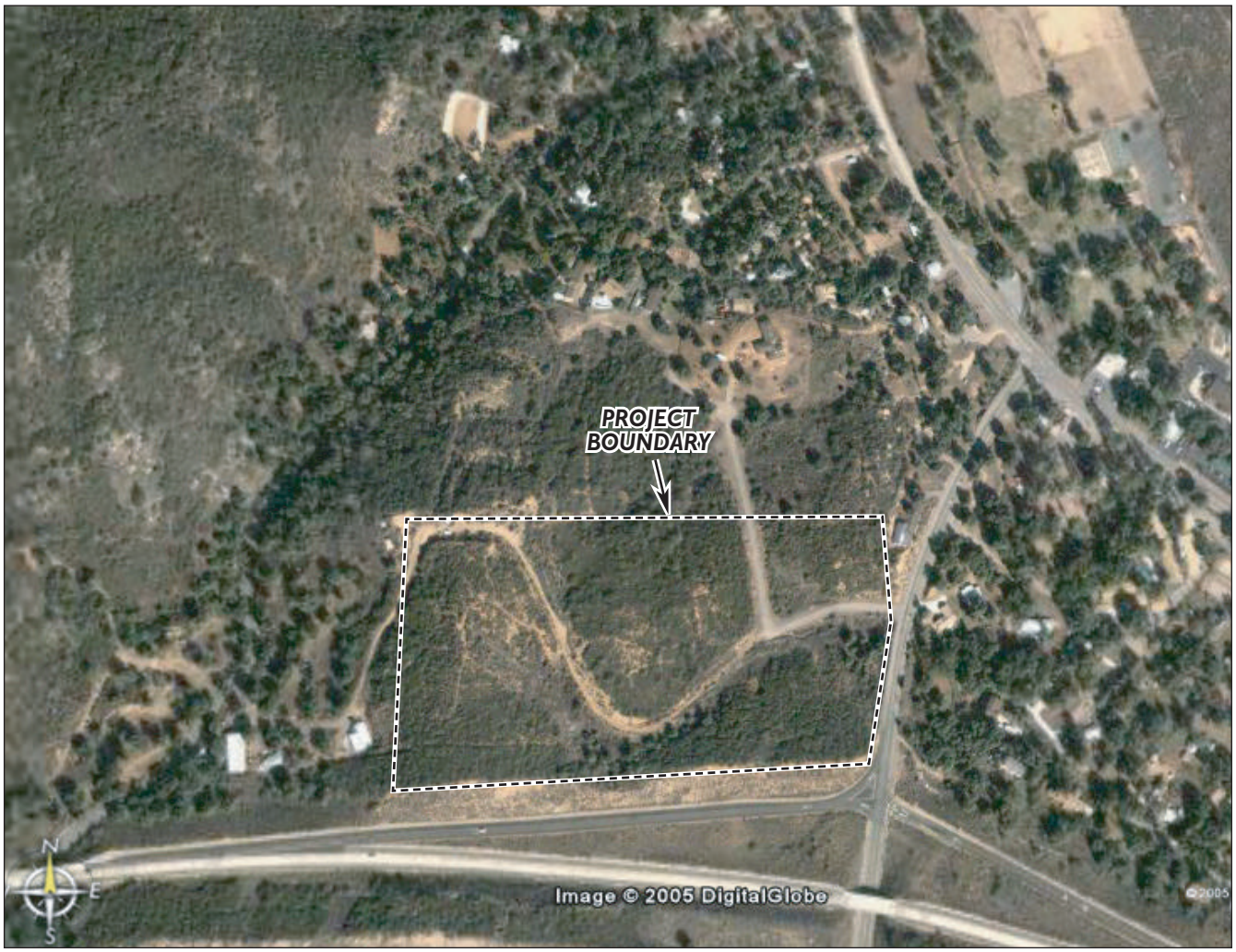


Figure 1
Top of the Pines Project Location

3.3 Site Climate

The site has a mild, moderately seasonal climate, reflecting its mid-elevation montane location between the coast and desert. Average daily high temperatures range from 51°F in January to 84°F in August, whereas lows range from 29°F in January to 55°F in July. Annual rainfall averages 35.8 inches per year, roughly 90 percent of which occurs from October through April (data from www.weather.com).

3.4 Surrounding Land Use

The area surrounding Top of the Pines is mostly undeveloped land administered by the Cleveland National Forest, although numerous private inholdings occur throughout. Moderately dense rural residential development in the community of Pine Valley occurs primarily to the northeast of the site. Undeveloped National Forest land occurs adjacent to the northwest corner of the site and extends northwestward to the community of Guatay. The transportation corridor of Interstate 8 forms a significant biological barrier immediately to the south, but beyond this is extensive undeveloped land, with only sparse residential development, in the Corte Madera Valley.

4.0 Biological Resources

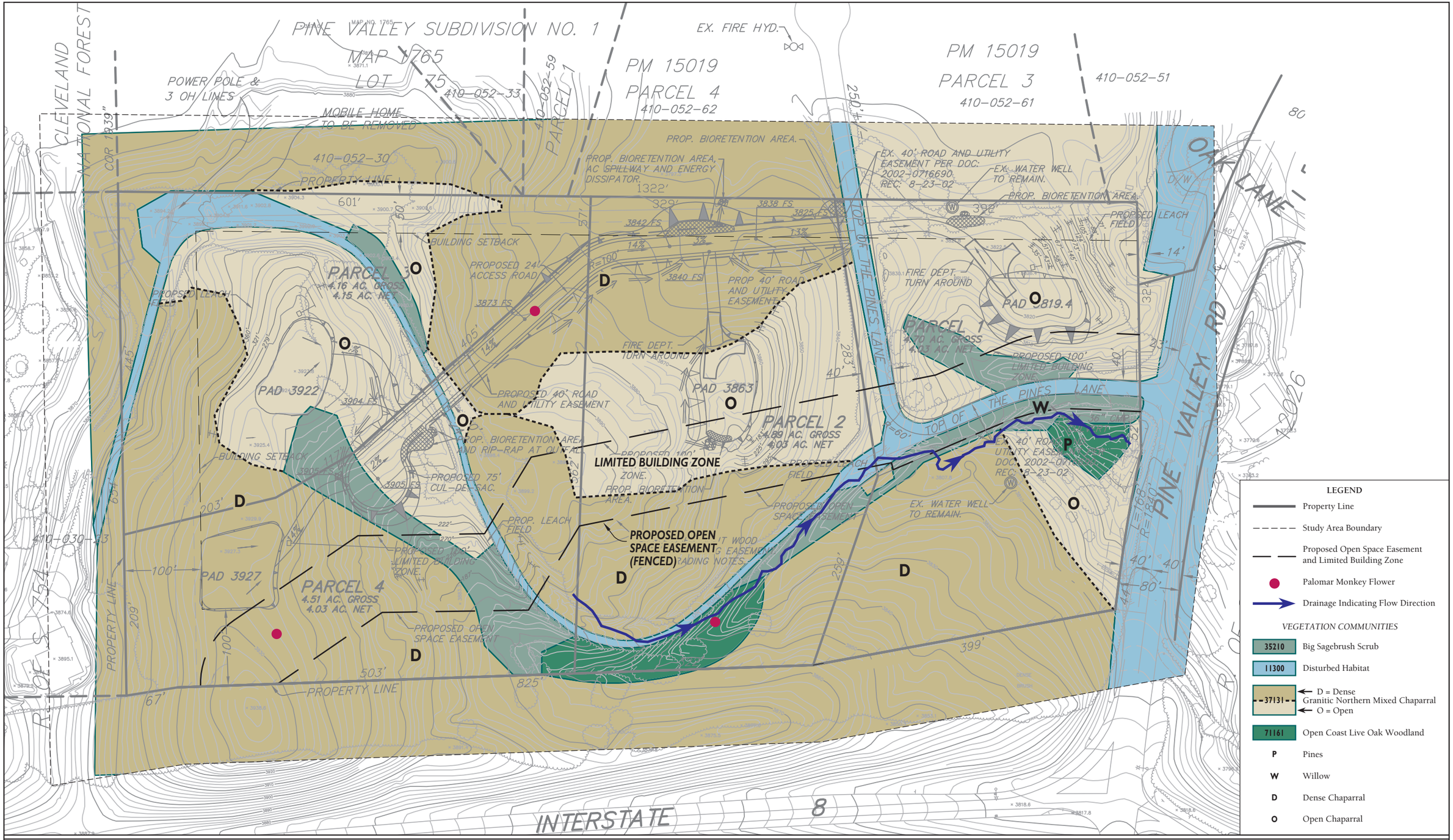
4.1 Vegetation

The location and elevation of Top of the Pines are transitional between the coastal zone and mountain regions of San Diego County. Plant community classification is according to Oberbauer's (1996) adaptation of the Holland (1986) system to San Diego County vegetation. Because of its potential relevance to the Quino, an additional distinction has been made between open and dense phases of one of the communities. Nomenclature and acreages are provided in Table 2. The distribution of vegetation types on the site and extending approximately 100 feet beyond the property boundaries (per the County's guidelines) is shown in Figure 2.

Table 2. Top of the Pines Vegetation Acres

Vegetation Type	Code	Acres
Granitic Northern Mixed Chaparral	37131	15.62
- Open Phase -		*9.07*
- Dense Phase -		*6.55*
Big Sagebrush Scrub	35210	1.26
Coast Live Oak Woodland	71161	0.45
Disturbed	11300	0.94
TOTAL		18.27

The vegetation reflects the transitional setting of the site and is dominated by chaparral that is somewhat difficult to categorize. Although it most closely resembles granitic northern mixed chaparral, which typically occurs at higher elevations in Southern California, it also includes several distinct montane elements that are typically associated with mixed montane chaparral (Holland 1986). The parallel environmental effects of higher latitude and higher elevation in California have caused much overlap in species composition between the northern mixed and montane chaparral types (Holland 1986) and the distinction is largely moot for the purposes of this report. The remainder of the site vegetation comprises smaller, discrete areas of big sagebrush scrub and coast live oak woodland (Figure 2, Table 2). The dominant chaparral shrub



Map Scale 1" = 120' when printed at 11x17

0 Feet 120

Figure 2
Vegetation Map for Top of the Pines Project

species are chamise (*Adenostoma fasciculatum*), cupleaf ceanothus (*Ceanothus greggii*), and scrub oak (*Quercus berberidifolia*). Other chaparral shrub elements that occur in lower proportion on the site include chaparral whitethorn (*Ceanothus leucodermis*), red shank (*Adenostoma sparsifolium*), manzanita (*Arctostaphylos glauca* and *A. glandulosa*), and mountain mahogany (*Cercocarpus betuloides*).

Chaparral vegetation on Top of the Pines consists of approximately equal proportions of two phases: relatively low (1 to 2 meters) and open (70 to 90% shrub cover) versus relatively tall (1.5 to 3 meters) and dense (90 to 100% cover). Figures 3 and 4 illustrate the differences between open and dense chaparral. This structural difference does not appear to correspond to shrub species composition, although the low, open areas tend to support a higher proportion of chamise. The lower shrub structure also occurs irrespective of topography and may reflect vegetation recovery from disturbances in past decades.

Figure 3. View Across Open Mixed Chaparral, Big Sagebrush Scrub, and Dense Mixed Chaparral on Property, with Freeway Cut and Long Valley Peak in Background

Figure 4. Stand of Big Sagebrush Scrub Surrounded by Relatively Open Mixed Chaparral

The discrete areas of big sagebrush scrub on the site, strongly dominated by big sagebrush (*Artemisia tridentata*), occur on relatively gradual terrain or along the road. The structure of this vegetation is comparable to the open phase chaparral in terms of density, but is lower in stature (Figure 4). Former disturbance may be a factor in the occurrence of this vegetation type on the site, as its distribution also corresponds to areas of obviously disrupted soil and the greatest concentrations of non-native weed species such black mustard (*Brassica nigra*). Further evidence of the association of big sagebrush with past disturbance is the concentration of this species along the road shoulder. The areas of big sagebrush scrub also support a succulent element consisting of prickly pear cactus (*Opuntia* sp.) and our lord's candle (*Yucca whipplei*).

Two stands of open coast live oak (*Quercus agrifolia*) woodland occur on the slopes of the gully that winds generally west to east through the southern portion of the site (Figure 5). The more eastern of these includes several small trees of Jeffrey pine (*Pinus jeffreyi*), reflecting the transitional elevation of the site. A single red willow (*Salix laevigata*) occurs at the eastern (lower) end of the gully.

Figure 5. Gully with Oaks Alongside Road

4.2 Sensitive Plant Species

DPLU has identified the following sensitive plant species as possibly occurring on the site.

Orcutt's brodiaea (*Brodiaea orcuttii*)
Dunn's mariposa lily (*Calochortus dunnii*)
Parish's pincushion flower (*Chaenactis parishii*)
Peninsular spine flower (*Chorizanthe leptotheca*)
Long-spined spine flower (*Chorizanthe polygonoides longspina*)
Tecate cypress (*Cupressus forbesii*)
Reiser's dudleya (*Dudleya alainiae*)
Laguna Mountain goldenbush (*Ericameria cuneata macrocephala*)
Vanishing wild buckwheat (*Eriogonum evanidum*)
Caraway-leaved gilia (*Gilia [Saltugilia] caruilifolia*)
Mount Laguna alumroot (*Heuchera brevistaminea*)
California hulsea (*Hulsea californica*)
Indian Valley bush mallow (*Malacothamnus aboriginum*)
Cleveland's monkey flower (*Mimulus clevelandii*)
Palomar monkey flower (*Mimulus diffusus*)
San Felipe monardella (*Monardella nana leptosiphon*)
Golden-rayed pentachaeta (*Pentachaeta aurea*)
Parish psoralea (*Rupertia rigid*a)
Bluish spike moss (*Selaginella asprella*)
Gander's butterweed (*Senecio ganderi*)
Laguna Mountain jewelflower (*Streptanthus bernardinus*)
Southern jewelflower (*Streptanthus campestris*)

Surveys to assess the possible occurrence of these species on the project site were conducted during the May-June, 2006 flowering season. A report on the survey results and list of plant

species observed is contained in Appendx A. One sensitive plant species, Palomar monkey flower, was observed in three locations on the site. This species is not rare, threatened or endangered, but is on San Diego County's List D (plants that are of limited distribution and are uncommon, but not presently rare or endangered), as well as the California Native Plant Society (CNPS) List 4 Watch List. Because of dry conditions in 2006, some species could have been present but undetectable; these include Caraway-leaved gilia and Peninsular spine flower (Appendix A), both of which are also County List D and CNPS List 4 plants. A species of mariposa lily (*Calochortus* sp.) was present in vegetative form but did not flower (Appendix A) and hence could not be identified. The presence of the sensitive Dunn's mariposa lily, however, is considered unlikely because that species occurs on rocky gabbroic or metavolcanic soils (CNPS 2006), which are not present on the project site.

In response to County comments (November 2009), the potential occurrence of vanishing wild buckwheat (*Eriogonum evanidum*) on the site was assessed in early November 2010, as described below.

Vanishing Wild Buckwheat

Vanishing wild buckwheat is a small statured annual plant that flowers between July and October (Flora of North America 2010). It is a CNPS List 1B species, and is therefore considered a County List A plant. It occurs in sandy soils in chaparral, lower montane coniferous forest, and pinyon and juniper woodland from 3,200-7,200 feet (970-2,200 meters) (CDFG 2010). The species has been documented and/or cited in relevant literature as historically occurring in San Diego, Riverside, and San Bernardino counties. An unknown number of individuals were documented as occurring in the northern portion of Pine Valley in 1994 (Consortium of California Herbaria 2010). The 1994 area of occurrence was revisited in 2008, but the site was developed and the population was believed to be extirpated (Consortium of California Herbaria 2010). Since then, no direct observational records of vanishing wild buckwheat exist in San Diego County.

On November 2, 2010, two TEC Inc. biologists surveyed the Top of the Pines project area for vanishing wild buckwheat. A meandering survey was performed throughout the entirety of the project site. Though the project site has seemingly suitable sandy soils and vegetation (mixed chaparral) to support the species, no vanishing wild buckwheat was observed. It should be noted that numerous specimens of slender woolly buckwheat (*Eriogonum gracile*) were observed as understory components within disturbed areas and transitional zones between chaparral and sagebrush scrub communities within the project area. Slender woolly buckwheat is similar in stature, growth form, and flowering seasonality to vanishing wild buckwheat, and was not observed in the previous (2006) survey, presumably because a) the rare plant survey in 2006 was conducted earlier in the season, when this late-flowering species may not have been detectable; and b) 2010 was a wetter, cooler year than 2006, affording better conditions for germination, growth, and detection of this late-flowering annual. On November 2, 2010, slender woolly buckwheat was in full flower and conspicuous, suggesting good conditions for the detection of vanishing wild buckwheat if it had been present. Therefore, the site is considered very unlikely to support vanishing wild buckwheat.

4.3 Wildlife

Appendix B presents the list of wildlife species identified on Top of the Pines, including 15 butterflies, 3 reptiles, 51 birds, and 4 mammals. Since all survey and inventory work was conducted during daylight hours and was directed toward species in vegetation and on the ground

surface, nocturnal and reclusive species are somewhat under-represented. No trapping of any kind was conducted.

Although oak - pine woodland represents only a small proportion of the site area, this habitat is well developed just east of Pine Valley Road and northward. Several bird species found on or immediately adjacent to Top of the Pines have greater affinity to woodlands or forest than to chaparral and their presence was likely attributable to the proximity of the former. The proximity of more extensive forest to the site may also influence the occurrence of animals of other taxa as well.

Woodrat (*Neotoma* sp) middens (stick shelters) were found throughout the vegetation on the site. Those in chaparral are tall and composed of sticks. Several others were built directly within patches of prickly pear cactus (*Opuntia* sp) and are lower and composed of generally smaller woody and other plant debris. It is possible that both woodrat species (*Neotoma fuscipes* and *N. lepida*) occur on the site, given its transitional location.

4.4 Sensitive Wildlife Species

Following are the evaluations of sensitive wildlife species identified by DPLU as possibly occurring on the site.

Quino checkerspot (*Euphydrias editha quino*)

A focused survey for this species was conducted on the site and results are presented in Appendix C. Survey results were negative, and the occurrence of this species on the site is considered unlikley.

Monarch Butterfly (*Danaus plexippus*)

This large, migratory butterfly is well known for its annual migrations from northern breeding areas to winter refugia on the California coast (Garth and Tilden 1986). It is of primary concern in San Diego County as an over-wintering species that utilizes coastal groves of native or non-native trees for shelter. Although the oak stands on the site may provide suitable cover for this species, winter weather conditions at this elevation are likely too severe to support it.

Arroyo toad (*Bufo californicus*)

This federally endangered species occurs in distinct populations along higher order watercourses with significant annual flows and sandy or rocky channels with suitable pool formation for breeding. This species is known to occur along Pine Valley Creek, which is 1-2 miles from the site. The small drainage on the site is deep and sandy, but is short in length and is only a first-order drainage, with broken continuity to the larger, downstream watercourses. It furthermore appears to support only occasional flows of short duration. This drainage therefore appears to be insufficient in area and flow to support arroyo toads. Given the distance from Pine Valley Creek, arroyo toads are very unlikely to utilize upland habitat on the site.

San Diego Horned Lizard (*Phrynosoma coronatum blainvillei*)

Horned lizards occur in relatively undisturbed, unfragmented areas of scrub and other partially open woody vegetation types. They also require a prey base of large ants and are often found in sparsely vegetated openings with conspicuous subterranean ant nests. This species is possible in

openings in the chaparral and big sagebrush scrub. Although none were found during the 2006 surveys, a juvenile was observed incidental to the 2010 vanishing buckwheat survey.

San Diego Ring-necked Snake (*Diadophis punctatus similis*)

This small, secretive snake can occur in arid habitats such as chaparral, but requires relatively mesic microhabitats such as drainages or tree stands with suitable shelter in the form of downed wood or rocks (Stebbins 1985). It is of possible occurrence on Top of the Pines in the small drainage and associated oak stands.

Turkey Vulture (*Cathartes aura*)

This highly mobile and wide-ranging bird is of conservation concern in Southern California at nesting sites, which occur on remote, often steep and rugged mountainsides with significant rock shelters. Chaparral is a vegetation type commonly associated with vulture nests, although the Top of the Pines site lacks suitable topography to support nesting of this species.

Sharp-shinned Hawk (*Accipiter striatus*)

This small, migratory raptor is a winter resident of Southern California, where it occurs in a wide variety of habitats that support the small birds that form the basis of its diet. Individuals typically hunt opportunistically over fairly large areas, but often show site fidelity to certain areas. The Top of the Pines site is likely utilized at times for foraging by this species.

Cooper's Hawk (*Accipiter cooperi*)

This resident, tree-nesting bird of prey is fairly widespread and has shown a degree of adaptability to human land uses. It forages widely over many habitat types, but requires a fairly secluded grove of trees for nesting. Therefore, it is of conservation concern in southern California with respect to its nesting sites. Although it prefers native tree stands, such as cottonwoods or oaks, it also utilizes tall, dense stands of non-native trees, such as Eucalyptus. One bird was seen flying over the site in July 2006. The low frequency of occurrence suggests that the site is not of importance to the nesting of this species, although the two oak stands provide potential nesting habitat. It is likely that the bird observed was associated with significantly larger stands of oaks and pines east of Pine Valley Road.

Golden Eagle (*Aquila chrysaetos*)

The golden eagle epitomizes the large, wide-ranging wildlife species that requires large sections of the landscape as habitat. Although it ranges over all habitats, it requires relatively open vegetation, such as grassland, for foraging. It is also extreme by comparison with other raptors in the sensitivity of its nesting sites, requiring remote, secluded sites. Nests are typically built on steep, inaccessible rocky promontories in southern California, although large trees are occasionally used. Top of the Pines lacks the openness and vastness required for foraging and lacks suitable nesting habitat for this species; although, eagles may occasionally be seen overhead.

Mountain Quail (*Oreortyx pictus eremophila*)

Characteristic of extensive areas of montane chaparral, this species is typically found far from human development. Calls of this species were heard from the surrounding mountainsides on one

occasion in May 2006, but this species would be expected to occur rarely, if ever, so close to development.

Bats

Bat habitat typically requires a combination of separate foraging areas and secluded refugia for day roosting, sheltering of young, or hibernation. The presence of open water or meadows, which support concentrations of flying insects, enhances the habitat value for most bat species. Some species require expansive caves or cave-like shelters such as buildings and mines, whereas others can utilize small rock crevices or tree cavities. Several species of relatively common, widespread bats may forage widely over a variety of vegetation types, but are locally sensitive due to the vulnerability of their roost sites.

Small-footed Myotis (*Myotis ciliolabrum*)

This species is associated with variably open foothill woodlands and brushlands. It requires caves, mines, rock crevices, or buildings for roosting (Burt and Grossenheider 1976, The Wildlife Society 1992), but none of these occur on Top of the Pines. The species, if it occurs in the Pine Valley area, is likely to forage over the site on occasion.

Long-eared Myotis (*Myotis evotis*)

A woodland bat of generally higher elevations, this species forms relatively small colonies and is more likely to roost in trees and buildings than in caves or mines (Ingles 1965, Burt and Grossenheider 1976, The Wildlife Society 1992). It is often associated with open water for foraging. The two small patches of oak woodland on the site may provide suitable roosting habitat, but no other shelters are present. It is more likely that this species, if it occurs in the Pine Valley area, occasionally forages over the site and roosts in trees or structures in the surrounding area.

Fringed Myotis (*Myotis thysanodes*)

This colonial, cave-roosting bat forages above shrub or woodland vegetation (Burt and Grossenheider 1976). Although trees can be used as roosts by multiple females with young (The Wildlife Society 1992), they presumably must have sufficiently large cavities to support these aggregations. The amount of oak woodland on the site is small, reducing the probability of roosts, but the site is likely to be used by any foraging bats from nearby forested areas.

Long-legged Myotis (*Myotis volans*)

A relatively non-gregarious bat, this species can find shelter in smaller refugia, including rock crevices and behind the bark of trees (The Wildlife Society 1992). It appears to favor moist habitats for foraging (The Wildlife Society 1992). This species may roost within the small areas of oak woodland on the site and may forage over the vegetation from on-site or local refugia.

Yuma myotis (*Myotis yumaensis*)

This small, migratory bat is closely associated with open water for foraging and roosts colonially for reproduction (maternity colonies) in buildings, under bridges, or in caves (Burt and Grossenheider 1976, The Wildlife Society 1992), none of which occur on the site. Furthermore, open water is of very short duration on this site. However, if this species occurs in the Pine Valley area, is likely to forage over the site on occasion.

Pallid Bat (*Antrozous pallidus*)

A relatively large bat, this species is gregarious and generally requires large shelters such as caves and buildings (The Wildlife Society 1992). It forages for large insects, which it often pursues on open ground. This bat is often associated with open shrub habitats. Suitable roosting habitat does not occur on the site; although, the site vegetation may be somewhat suitable as foraging habitat.

Townsend's Big-eared Bat (*Corynorhinus townsendii*)

This is a cave-roosting species that apparently does not utilize smaller shelters, such as rock crevices and tree cavities (The Wildlife Society 1992). It is gregarious, with females forming large nursery colonies (Burt and Grossenheider 1976, The Wildlife Society 1992). Although, suitable roosting habitat does not occur on Top of the Pines, this species does associate with shrub and open woodland habitats for foraging (Ingles 1965).

Greater Western Mastiff Bat (*Eumops perotis californicus*)

A large, wide-ranging, high-flying bat, this species often forages high above ground and not in close association with vegetation (The Wildlife Society 1992). It has restricted roosting requirements, which include deep rock crevices or comparable human structures. No such roosting habitat occurs on the Top of the Pines site and the species, if present in the area, would make only marginal use of the site for foraging.

San Diego Black-tailed Hare (*Lepus californicus bennettii*)

This moderate-sized mammal inhabits large, unfragmented areas of open habitat such as grassland, open coastal sage scrub, and desert scrub. However, it is tolerant of human land use practices such as farming and grazing. This species is not likely to occur on Top of the Pines due to the relatively dense vegetation.

Northwestern San Diego Pocket Mouse (*Chaetodipus fallax fallax*)

A small rodent associated with arid, open weedy or grassy habitat with sparse woody cover at lower elevations. It is typically associated with sandy soils, presumably for facility of burrowing (Ingles 1965, Burt and Grossenheider 1976). The majority of the site supports dense to only moderately open shrub vegetation and site soils are generally well consolidated. Relatively open areas of big sagebrush scrub have softer soils, which may provide limited and isolated patches of suitable habitat for this mouse, but its occurrence on the site is unlikely.

Ringtail (*Bassariscus astutus*)

A secretive, but widespread and opportunistic small predator of middle to higher elevation, this species is found in shrub to forested habitats (Ingles 1965). It is likely to occur on the site.

American Badger (*Taxidea taxus*)

This mid-sized predator requires large, unfragmented areas of open habitat such as grassland, open coastal sage scrub, and desert scrub and, although moderately tolerant of human land use practices such as farming and grazing, it avoids direct human contact. This species is not likely to occur on Top of the Pines due to the prevalence of relatively dense shrub cover and the proximity to human settlement.

Mountain Lion (*Felis concolor*)

A large and wide-ranging predator, this species requires extensive areas of predominantly undeveloped land that may include many habitat types. It is generally intolerant of human

proximity, although its movements often bring it near human communities. Considering the size and location of Top of the Pines with respect to development, including proximity to a freeway, the site is likely to support only occasional transient use by mountain lions.

Southern Mule Deer (*Odocoileus hemionus*)

Moderately common in valleys and hills away from human population centers, this species requires large areas for foraging movements. Its home ranges often include several different habitats types, although extensive, dense chaparral is avoided due to its impairment of mobility. Considering the size and vegetation cover of the site, occasional use by deer is expected; although, none were detected during surveys.

5.0 Sensitive Habitats

Sensitive vegetation communities on and adjacent to the property, and the corresponding mitigation ratios based on the County's Guidelines for Determining Significance, are as follows:

- Granitic Northern Mixed Chaparral, 0.5:1
- Big Sagebrush Scrub, 2:1
- Coast Live Oak Woodland, 3:1

The approximately 0.45 acre of coast live oak woodland occurs along the slopes of a small gully and drainage at the southern property boundary. The oak woodland would be protected by an open space easement. Contiguous areas of sensitive vegetation have been identified for protection via a proposed open space easement as shown in Figure 2. The proposed open space easement incorporates minor modifications to the Preliminary Grading Plan as follows:

- In the southeastern portion of the property, the proposed open space boundary has been shifted to the south outside a proposed leach field where grading is proposed. The inclusion of the graded leach field area would not have been consistent with habitat protection in the open space easement.

The proposed open space easement appears to represent the maximum preservation of continuous habitat on the property which would be compatible with the development as currently proposed.

A small drainage within a gully on the site lacks wetland vegetation, but would be considered a streambed subject to State Fish and Game Code 1600-1603. This drainage is also a Clean Water Act section 404 non-wetland water of the U.S. Drainage modifications would require authorization by the US Army Corps of Engineers and California Department of Fish and Game. Preservation of the oak trees along the edges of the drainage as proposed would maintain the stability of the drainage and habitat values associated with the oak trees. Since the drainage extends outside of the biological open space easement, it could be impacted. As a result, project approval by the County would be conditional upon either obtaining the required permits for any alteration of the drainage, or demonstrating its avoidance in the final grading and site development plans.

6.0 Evaluation of Resources and Anticipated Project Impacts

The project site is within the County's East County Multi-Species Conservation Planning area. The East County Plan is currently under development. The preliminary draft plan map (http://www.sdcounty.ca.gov/dplu/mscp/ec.html) does not show the site as being within a focused conservation area.

The site includes mostly regionally common habitat types, and is bordered on the south by I-8 and otherwise by rural-residential development of the community of Pine Valley (Figure 1). Small areas of oak woodland with contiguous big basin sagebrush are present in the southern part of the site, mostly surrounded by mixed chaparral (Table 2, Figure 2). The proximity of the project site to I-8 and to other development in Pine Valley (Figure 1) limits its potential conservation value.

The site is traversed by a dirt road which is used by residents, but disturbance of the site is relatively low, and native vegetation and wildlife habitat predominate. No rare, threatened, or endangered species are documented or likely to occur on the site; although, several County-recognized sensitive species have been observed, or are reasonably likely to occur on the site. The site does not appear to be essential to local or regional populations of any sensitive species, and is not situated along obvious corridors for wildlife movement. Considering all of the above, the site has low to moderate conservation value.

The proposed tentative parcel map would provide four lots, each with one residential building site, with connecting roads on the property. Direct project impacts would include the grading and removal of native vegetation and wildlife habitat to create a residential home site on each lot, plus additional acreage for roads, utilities, and slope stabilization (Figure 2). Roughly half of the site would be subject to direct impacts. With development of the site, the remaining habitat would become more fragmented and discontinuous and would experience additional anthropogenic disturbance, diminishing its values.

Impacts to habitat based on the Preliminary Grading Plan and Proposed Open Space Easement (Figure 2) are shown in Table 3. Required mitigation based on the County's ratios for impacted habitat types is also shown. Based on these calculations, a net required mitigation of 7.72 acres is identified. Since the acreage preserved on-site would not be sufficient to meet this requirement, off-site mitigation would be required, amounting to 1.38 acres of big sagebrush scrub and 2.26 acres of granitic northern mixed chaparral.

Table 3. Impacts to Habitat and Required Mitigation

Habitat Type	Existing Acres	Impact Acres	Acres Preserved	Mitigation Ratio	Total Mitigation	Off-Site Mitigation
Open Coast Live Oak Woodland	0.45	0	0.45	3:1	0	0
Big Sagebrush Scrub	1.26	0.88	0.38	2:1	1.76	1.38
Granitic Northern Mixed Chaparral	15.62	11.92	3.70	0.5:1	5.96	2.26
Disturbed-Developed Habitat	0.94	0.85	0.09	N/A	0	0
Total	**18.27**	**13.65**	**4.62**	**-**	**7.72**	**3.64**

7.0 Mitigation Measures

In addition to incorporating a limited building zone and the on-site Open Space Easement, the project will be conditioned to acquire offsite mitigation for big sagebrush scrub or habitat of similar function and value in a mitigation bank approved by the DPLU, located in southeastern San Diego County or purchase land inholdings of big sagebrush scrub or habitat of similar function and value within the Anza Borrego State Park. The inholdings shall be approved by the DPLU prior to purchase. If an inholding is purchased, the lands will either be transferred to a governmental agency charged with conservation of natural resources via fee title or (with

demonstration of long term management capabilities) or dedicated in a conservation easement to the County and the land will be managed through an approved Resource Management Plan (RMP) to the satisfaction of the DPLU.

8.0 Certification and Qualifications

Mr. John Konecny is an ornithologist with more than 20 years of experience in environmental studies and ecology, including project management, report and proposal preparation, impact analysis, quantitative and qualitative vegetation analysis, vegetation mapping, general floristic assessment, construction monitoring, and general biological surveys. He has conducted focused surveys for California gnatcatcher, least Bell's vireo, Yuma and light-footed clapper rail, Belding's savannah sparrow, arroyo toad, desert tortoise, and southwestern willow flycatcher. In addition, he has conducted nest monitoring of the least Bell's vireo, light-footed clapper rail, and California gnatcatcher; construction monitoring for the arroyo southwestern toad, desert tortoise, least Bell's vireo, and CAGN; and brown-headed cowbird trapping. Mr. Konecny participated in a 2-year long general avifaunal survey of the Salton Sea. He regularly assists clients in consultations with the USFWS under Section 7 of the federal Endangered Species Act and serves as a liaison to the California Department of Fish and Game for the client.

Mr. John Lovio has 26 years of experience as a field, research, and regulatory biologist and holds a Master's Degree in biology-ecology from San Diego State University (1997). His professional experience includes federal resource and regulatory agencies, academic institutions, and environmental consulting companies. His avocational experience with wildlife extends 36 years. Mr. Lovio specializes in the habitat relations, landscape ecology, and reproduction of western birds and his experience includes various forms of avian census, survey, monitoring, trapping, and banding. Mr. Lovio is also experienced in the identification and ecologies of other terrestrial vertebrates, vegetation sampling, characterization of wildlife habitats, and fire/disturbance ecology. He has a strong ecological base, including practical considerations of disturbance ecology, landscape ecology, and island biogeography, as they relate to assessing and planning for natural preserves in man-altered environments. He applies his knowledge and perspective to impact and site assessment, evaluation of habitat restoration efforts, conservation planning, interpretation of geographic data, and ecological trend monitoring. He is skilled at statistical analysis and interpretation of field data for practical conservation planning. His planning experience includes co-authorship of the California Partners in Flight statewide Bird Conservation Plan for chaparral and coastal scrub habitats. Mr. Lovio is a Research Associate of the Wildlife Research Institute in Ramona, California.

Mr. Lovio has extensive experience with federal and California state environmental regulations, including the Endangered Species Act, National Environmental Policy Act, California Environmental Quality Act, Natural Communities Conservation Planning Act, Sikes Act, and Comprehensive Environmental Response, Compensation, and Liability Act.

Ms. Genie Fleming is a botanist with 15 years of local experience in vegetation science and botanical surveys in San Diego County. She received her master's degree from San Diego State University has been affiliated with the San Diego Museum of Natural History. She has conducted extensive research on vegetation responses to fire and, as a consultant, specializes in plant surveys, monitoring, and vegetation community mapping.

Ms. Melissa Tu is a Senior Biologist and San Diego County-approved CEQA consultant with broad experience in wildlife surveys, endangered species monitoring, vegetation mapping, rare plants surveys, and wetlands delineations. She has extensive experience in Endangered Species Act compliance, including field experience surveying, monitoring, capturing, and handling

threatened and endangered species; such as the California least tern, western snowy plover, coastal California gnatcatcher, least Bell's vireo, California condor, and Kemp's ridley sea turtle. She has experience surveying for southern California rare plants, including the federally listed thread-leaved Brodiaea (*Brodiaea filifolia*), San Diego button celery (*Eryngium aristulatum* var. *parishii*), and San Diego mesa mint (*Pogogyne abramsii*). Also, she has experience mapping southern California vegetation; and conducting wetland delineations throughout California. Ms. Tu has been involved in working for a variety of federal agencies, including the U.S. Marine Corps, the U.S. Geological Survey, and the National Park Service. She has participated in avian conservation projects for the San Diego Zoo, including the California condor captive breeding program. Because her field work has always demanded careful documentation, she is a practiced user of Global Positioning System (GPS) and Geographic Information System (GIS) systems as well as of desktop publishing software.

Dr. Mike Dungan is a senior ecologist and project manager with over 25 years' experience in terrestrial, wetland, and marine ecosystems. He has been a project manager as well as technical contributor to baseline biological resource studies and habitat evaluations, project permitting and regulatory compliance, and environmental impact assessment under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). In addition to having a working knowledge of the requirements of NEPA and CEQA in all resource areas, his technical expertise includes wetlands (delineation, classification, impact assessment, mitigation, and restoration feasibility and design); terrestrial vegetation (vegetation and rare plant surveys, oak tree inventories, and revegetation/restoration issues); and endangered species and habitat issues, particularly as related to land and water use and military activities in coastal and desert environments in the Southwest. Dr. Dungan's San Diego County experience includes habitat and vegetation analyses for the San Dieguito River Wetland Restoration Project; being project manager and/or biological resources lead for a variety of projects on MCB Camp Pendleton, (including the Santa Margarita River Conjunctive Use Project), the Fallbrook Naval Weapons Station, Miramar Naval Air Station, locations around San Diego Bay and at Imperial Beach, and for a landfill project on the Campo Indian Reservation.

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APPENDIX A
BOTANICAL SURVEY RESULTS

Top of the Pines Rare Plant Survey: Field Notes

13 May 2006

Ceanothus spp. blooming. *C. greggii* most abundant species on site, though scatterd *C. leucodermis* individuals also occur. *C. crassifolius* not seen, though mentioned in draft report.

Annuals mostly absent from areas of open shrub (e.g. hilltops), but occurring in low densities along roads, water courses, and under shade of shrubs. Annual community along roads and in disturbed areas dominated by non-native species, but non-natives more or less restricted to these areas. Some native annuals in bloom, but others will bloom in 1-2 weeks or die before blooming. *Cryptantha* spp. and *Scutellaria tuberosa* most common native annuals present on site.

Perennial herbs also sparsely scattered throughout site, but most not in bloom. *Lomatium dasycarpum* most common perennial herb seen, primarily under shrubs. Subsequent visit needed to identify liliaceous species.

Mimulus diffusus (currently included in *M. palmeri*) only rare plant seen on site during this survey. Three locations noted, with number of individuals ranging from ~15-50 (counts approximate as many individuals very small, not blooming, and not easily seen). Separate CNDD forms completed for each location, locations flagged in pink, and photos taken. All locations on north-facing slopes and two locations along or near water courses.

Three *Mimulus diffusus* (MIDI) locations on project site.

Location 1: In weak drainage flowing toward northwestern property boundary. Pink flag on *Adenostoma fasciculatum* nearby and flag on *Ceanothus greggii* upslope to east. Flag on *Artemisia tridentata* by road for approach (see photos).

Approach to *Mimulus diffusus* Location 1 from dirt road.

View of general habitat near *Mimulus diffusus* Location 1.

Two views of flowering *Mimulus diffusus* individual at Location 1 (chapstick included for scale).

Location 2: Approximately 5-10m north of fence along southern boundary, near top of hill and end of very old road visible in aerial photos. Pink flags in shrubs near 3 clusters of individuals.

Approach to *Mimulus diffusus* Location 2 from along old dirt road (pink flag on shrub near photo center marks location).

View of general habitat near *Mimulus diffusus* Location 2.

View of *Mimulus diffusus* individuals at Location 2.

Location 3: In riparian drainage near southern property boundary approx 15-20m from dirt road. Pink flagging in shrubs marking approach from road and location of individuals.

Approach to *Mimulus diffusus* Location 3 from along old dirt road and view of general habitat (pink flag on *Arctostaphylos* near photo center marks location).

View of *Mimulus diffusus* individuals at Location 3.

3 June 2006

Calocortus sp. still not blooming. Most individuals subjected to herbivory and not likely to bloom this year. *C. weedii* and/or *C. concolor* seem most likely to be present on site. Presence of *C. dunnii* on site seems unlikely, based on limited personal experience (i.e. habitat unlike other

areas where *C dunnii* seen), but cannot be definitively ruled out until plants on site seen in bloom.

Delphinium sp. abundant in chaparral south of paved portion of Top of the Pines Lane (i.e. southeastern corner of property), but not in flower. Probably *D. cardinale* based on habitat, location, and flowering time but can't give definitive identification until plants flower.

General Notes

Late rainfall appeared to have resulted in poor germination of annual species in 2006, based on personal observations at multi-year study sites near the project area. Thus, presence of some rare annuals on the project site cannot be definitively ruled out. Among those listed in the draft report, rare species seeming most likely to be missing as a result of poor germination include *Gilia caruifolia* and, to a lesser extent, *Chorizanthe leptotheca*.

Top of the Pines Plant Species List

FAMILY	*Genus*	*Specific epithet*	Spec. Author	Infra. type	*Infraspecific name*	Infra. Author	COMMON NAME	Origin	Life History	Growth Form	CNPS Listing	Federal Listing	CA State Listing	Notes
ANACARDIACEAE	*Rhus*	*trilobata*	Torrey & A. Gray				BASKETBUSH	Native	Perennial	Shrub				
APIACEAE	*Lomatium*	*dasycarpum*	(Torrey & A. Gray)J. Coulter & Rose	ssp.	*dasycarpum*		WOOLY-FRUIT LOMATIUM	Native	Perennial	Forb				
APIACEAE	*Lomatium*	*lucidum*	(Torrey & A. Gray)Jepsor				SHINY LOMATIUM	Native	Perennial	Forb				
ASTERACEAE	*Achillea*	*millefolium*	L.				YARROW	Native	Perennial	Forb				
ASTERACEAE	*Acourtia*	*microcephala*	DC.				SACAPELLOTE	Native	Perennial	Forb				
ASTERACEAE	*Agoseris*	*grandiflora*	(Nutt.)E. Greene				LARGE-FLOWER AGOSERIS	Native	Perennial	Forb				
ASTERACEAE	*Ambrosia*	*acanthicarpa*	Hook.				ANNUAL BUR-SAGE/WEED	Native	Annual	Forb				
ASTERACEAE	*Artemisia*	*tridentata*	Nutt.	ssp.	*tridentata*		BIG SAGEBRUSH	Native	Perennial	Shrub				
ASTERACEAE	*Centaurea*	*melitensis*	L.				TOCALOTE	Exotic	Annual	Forb				
ASTERACEAE	*Cirsium*	*occidentale*	(Nutt.)Jepson	var.	*californicum*	(A Gray)Keil & C. Turner	CALIFORNIA THISTLE	Native	Perennial	Forb				
ASTERACEAE	*Ericameria*	*parishii*	(e. Greene)H. M. Hall				PARISH'S GOLDENBUSH	Native	Perennial	Shrub				
ASTERACEAE	*Erigeron*	*foliosus*	Nutt.	var.	*foliosus*		LEAFY DAISY	Native	Perennial	Forb				
ASTERACEAE	*Eriophyllum*	*confertiflorum*	(DC.)A. Gray	var.	*confertiflorum*		GOLDEN-YARROW	Native	Perennial	Subshrub				
ASTERACEAE	*Filago*	*californica*	Nutt.				CALIFORNIA FILAGO	Native	Annual	Forb				
ASTERACEAE	*Filago*	*gallica*	L.				NARROW LEAF FILAGO	Exotic	Annual	Forb				
ASTERACEAE	*Gnaphalium*	*californicum*	DC.				CALIFORNIA EVERLASTING	Native	Annual	Forb				
ASTERACEAE	*Gnaphalium*	*canescens*	DC.				EVERLASTING CUDWEED	Native	Perennial	Forb				
ASTERACEAE	*Gutierrezia*	*sarothrae*	(Pursh)Britton & Rusby				SAN JOAQUIN MATCHWEED	Native	Perennial	Subshrub				
ASTERACEAE	*Hazardia*	*squarrosa*	(Hook. & Arn.)E. Greene	var.	*grindelioides*	(DC.)W. Clark	SAWTOOTH GOLDENBUSH	Native	Perennial	Shrub				
ASTERACEAE	*Hedypnois*	*cretica*	(L.) Dum.-Cours.				CRETE HEDYPNOIS	Exotic	Annual	Forb				
ASTERACEAE	*Helianthus*	*gracilentus*	A. Gray				SLENDER SUNFLOWER	Native	Perennial	Forb				
ASTERACEAE	*Heterotheca*	*grandiflora*	Nutt.				TELEGRAPH WEED	Native	Annual	Forb				
ASTERACEAE	*Lessingia*	*filaginifolia*	(Hook. & Arn)M.A. Lane	var.	*filaginifolia*		COMMON CALIFORNIA-ASTER	Native	Perennial	Subshrub				
ASTERACEAE	*Madia*	*exigua*	(Smith)A. Gray				PYGMY MADIA	Native	Annual	Forb				
ASTERACEAE	*Solidago*	*californica*	Nutt.				CALIFORNIA GOLDENROD	Native	Perennial	Forb				
ASTERACEAE	*Stylocline*	*gnaphaloides*	Nutt.				EVERLASTING NEST-STRAW	Native	Annual	Forb				
ASTERACEAE	*Uropappus*	*lindleyi*	(DC.)Nutt.				SILVER PUFFS	Native	Annual	Forb				
BORAGINACEAE	*Cryptantha*	*intermedia*	(A. Gray)E. Greene				COMMON CRYPTANTHA, NIEVITAS CRYPTANTHA	Native	Annual	Forb				
BORAGINACEAE	*Cryptantha*	*muricata*	(Hook.& Arn.)Nelson & J.F. Macbr.				PRICKLY CRYPTANTHA	Native	Annual	Forb				
BORAGINACEAE	*Plagiobothrys*	*collinus*	(Philbr.)I.M. Johnstor				POPCORNFLOWER	Native	Annual	Forb				
BRASSICACEAE	*Arabis*	*pulchra*	M.E. Jones	var.	*gracilis*	M.E. Jones	ROCK-CRESS	Native	Perennial	Forb				
BRASSICACEAE	*Athysanus*	*pusillus*	(Hook.) E. Greene				DWARF AHTYSANUS	Native	Annual	Forb				
BRASSICACEAE	*Descurainia*	*pinnata*	(Walter)Britton	ssp.	*menziesii*	(DC.)Delt.	WESTERN TANSY-MUSTARD	Native	Annual	Forb				
BRASSICACEAE	*Draba*	*cuneifolia*	Torrey & A. Gray				DESERT WHITLOW	Native	Annual	Forb				
BRASSICACEAE	*Erysimum*	*capitatum*	(DouglasE. Greene	ssp.	*capitatum*		WESTERN WALLFLOWER	Native	Perennial	Forb				
BRASSICACEAE	*Hirschfeldia*	*incana*	(L.)Lagr.-Fossal				SHORTPOD MUSTARD	Exotic	Perennial	Forb				
BRASSICACEAE	*Lepidium*	*nitidum*	Torrey & A. Gray	var.	*nitidum*		SHINING PEPPERGRASS	Native	Annual	Forb				
BRASSICACEAE	*Sisymbrium*	*altissimum*	L.				TUMBLE MUSTARD	Exotic	Annual	Forb				
CACTACEAE	*Opuntia*	sp.					PRICKLY-PEAR	Native	Perennial	Shrub				
CAPRIFOLIACEAE	*Lonicera*	*subspicata*	Hook. & Arn.	var.	*denudata*	Rehder	SOUTHERN HONEYSUCKLE	Native	Perennial	Vine/Shrub				
CAPRIFOLIACEAE	*Sambucus*	*mexicana*	C. Presl				BLUE/DESERT ELDERBERRY	Native	Perennial	Shrub				
CHENOPODIACEAE	*Chenopodium*	*album*	L.				PIGWEED; LAMB'S QUATERS	Exotic	Annual	Forb				
CISTACEAE	*Cistus*	*creticus*	L.				PURPLE ROCK ROSE	Exotic	Perennial	Shrub				
CRASSULACEAE	*Crassula*	*connata*	(Ruiz lopez & Pavon)A. Berger				PYGMY WEED	Native	Annual	Forb				
CUCURBITACEAE	*Marah*	*macrocarpus*	(E. Greene)E. Greene	var.	*macrocarpus*		CUCAMONGA MANROOT, CHILICOTHE	Native	Perennial	Vine				
ERICACEAE	*Arctostaphylos*	*glandulosa*	Eastw.				MANZANITA	Native	Perennial	Shrub				
ERICACEAE	*Arctostaphylos*	*glauca*	Lindley				BIG BERRY MANZANITA	Native	Perennial	Shrub				
FABACEAE	*Lathyrus*	*vestitus*	Nutt.	var.	*alefeldii*	(T. White)Isely	SAN DIEGO SWEET PEA	Native	Perennial	Vine				
FABACEAE	*Medicago*	*polymorpha*	L.				CALIFORNIA BURCLOVER	Exotic	Annual	Forb				
FAGACEAE	*Quercus*	*agrifolia*	Nee				COAST LIVE OAK	Native	Perennial	Tree				
FAGACEAE	*Quercus*	*berberidifolia*	Liebm.				SCRUB OAK	Native	Perennial	Shrub				Some individuals may be hybrids with *Q. engelmannii* or possibly *Q. acutidens*
GERANIACEAE	*Erodium*	*cicutarium*	(L.)L'Her.				RED-STEM FILAREE/STORKSBILL	Exotic	Annual	Forb				
HYDROPHYLLACEAE	*Nemophila*	*menziesii*	Hook. & Arn.				BABY BLUE EYES	Native	Annual	Forb				
HYDROPHYLLACEAE	*Phacelia*	*brachyloba*	(Benth.)A. Gray				SHORTLOBE PHACELIA	Native	Annual	Forb				
HYDROPHYLLACEAE	*Phacelia*	*imbricata*	E. Greene	ssp.	*patula*	(Brand)Heckard	IMBRICATE PHACELIA	Native	Perennial	Forb				
LAMIACEAE	*Lamium*	*amplexicaule*	L.				HENBIT	Exotic	Annual	Forb				
LAMIACEAE	*Marrubium*	*vulgare*	L.				HOREHOUND	Exotic	Perennial	Forb				
LAMIACEAE	*Salvia*	*columbariae*	Benth.				CHIA	Native	Annual	Forb				
LAMIACEAE	*Scutellaria*	*tuberosa*	Benth.				DANNY'S SKULLCAP	Native	Perennial	Forb				
LAMIACEAE	*Trichostema*	*parishii*	Vasey				MOUNTAIN BLUECURLS	Native	Perennial	Shrub				
LILIACEAE	*Calochortus*	sp.					MARIPOSA-LILY	Native	Perennial	Forb				No individuals seen flowering, identification to one or more species not possible.
LILIACEAE	*Dichelostemma*	*capitatum*	Alph. Wood				BLUE DICKS	Native	Perennial	Forb				
LILIACEAE	*Yucca*	*whipplei*	Torrey				OUR LORD'S CANDLE	Native	Perennial	Shrub				
ONAGRACEAE	*Camissonia*	*hirtella*	(E. Greene)Raven				FIELD SUN CUP	Native	Annual	Forb				

Top of the Pines Plant Species List

FAMILY	*Genus*	*Specific epithet*	Spec. Author	Infra. type	*Infraspecific name*	Infra. Author	COMMON NAME	Origin	Life History	Growth Form	CNPS Listing	Federal Listing	CA State Listing	Notes
ONAGRACEAE	*Clarkia*	*purpurea*	(Curtis)Nelson & J.F. Macbr.	ssp.	*quadrivulnera*	(Douglas)Harlan Lewis & M. Lewis	FOUR-SPOT CLARKIA	Native	Annual	Forb				
ONAGRACEAE	*Clarkia*	*rhomboidea*	Douglas				DIAMOND CLARKIA	Native	Annual	Forb				
ONAGRACEAE	*Epilobium*	*canum*	(E. Greene)Raven				CALIFORNIA-FUCHSIA	Native	Perennial	Subshrub				
PAEONIACEAE	*Paeonia*	*californica*	Torrey & A. Gray				CALIFORNIA PEONY	Native	Perennial	Forb				
PINACEAE	*Pinus*	*jeffreyi*	Grev. & Balf.				JEFFREY PINE	Native	Perennial	Tree				Most individuals appear relatively young and none seen with cones; identification tentative.
POACEAE	*Achnatherum*	*coronata*	(Thurber)Barkworth				GIANT STIPA	Native	Perennial	Grass				
POACEAE	*Bromus*	*diandrus*	Roth				COMMON RIPGUT-GRASS	Exotic	Annual	Grass				
POACEAE	*Bromus*	*hordeaceus*	L.				SOFT CHESS	Exotic	Annual	Grass				
POACEAE	*Bromus*	*madritensis*	L.	ssp.	*rubens*	(L.)Husnot	FOXTAIL CHESS	Exotic	Annual	Grass				
POACEAE	*Bromus*	*tectorum*	L.				CHEAT GRASS; DOWNY BROME	Exotic	Annual	Grass				
POACEAE	*Elytrigia*	*intermedia*	(Host)Nevski	ssp.	*intermedia*		INTERMEDIATE WHEATGRASS	Exotic	Perennial	Grass				
POACEAE	*Melica*	*imperfecta*	Trin.				COAST RANGE MELIC	Native	Perennial	Grass				
POACEAE	*Nassella*	*lepida*	(A. Hitchc.)Barkworth				FOOTHILL NEEDLEGRASS/STIPA	Native	Perennial	Grass				
POACEAE	*Schismus*	*barbatus*	(L.)Thell.				MEDITERRANEAN SCHISMUS	Exotic	Annual	Grass				
POACEAE	*Vulpia*	*myuros*	(L.)C.Gmelin				FOXTAIL FESCUE	Exotic	Annual	Grass				
POLEMONIACEAE	*Allophyllum*	*gilioides*	(Benth.)A.D. Grant & V. Grant	ssp.	*violaceum*	(A. A. Heller)A.G. Day	VIOLET FALSE-GILIA	Native	Annual	Forb				*Allophyllum violaceum* (Heller)A. & V. Grant in Checklist of the Vascular Plants of San Diego County 3rd Ed.
POLEMONIACEAE	*Linanthus*	*floribundus*	(A. Gray)Milliken	ssp.	*glaber*	R. Patterson	SUMMER SNOW	Native	Perennial	Forb				*Leptosiphon floribundus* (A. Gray)J.M. Porter & L.A. Johnson ssp. *glaber* (R.Patt.)J.M. Porter & L.A. Johnson in Checklist of the Vascular Plants of San Diego County 3rd Ed.
POLYGONACEAE	*Eriogonum*	*elongatum*	Benth.	var.	*elongatum*		TALL BUCKWHEAT	Native	Perennial	Forb				
POLYGONACEAE	*Eriogonum*	*fasciculatum*	Benth.				CALIFORNIA BUCKWHEAT	Native	Perennial	Shrub				
PORTULACACEAE	*Calyptridium*	*monandrum*	Nutt.				COMMON CALYPTRIDIUM; PUSSY PAWS	Native	Annual	Forb				
PORTULACACEAE	*Claytonia*	*perfoliata*	Willd.				MINER'S LETTUCE	Native	Annual	Forb				
PTERIDACEAE	*Pentagramma*	*triangularis*	(Kauf.)G. Yatskievych, M.D. Windham & E. Wollenweber				GOLDENBACK FERN, SILVERBACK FERN	Native	Perennial	Forb				
RANUNCULACEAE	*Delphinium*	sp.					LARKSPUR	Native	Perennial	Forb				No individuals seen flowering, identification to one or more species not possible.
RHAMNACEAE	*Ceanothus*	*greggii*	A. Gray	var.	*perplexans*	(Trel.)Jepson	CUPLEAF-LILAC	Native	Perennial	Shrub				
RHAMNACEAE	*Ceanothus*	*leucodermis*	E. Greene				CHAPARRAL WHITETHORN; WHITEBARK LILAC	Native	Perennial	Shrub				
RHAMNACEAE	*Rhamnus*	*ilicifolia*	Kellogg				HOLLY-LEAF REDBERRY	Native	Perennial	Shrub				
ROSACEAE	*Adenostoma*	*fasciculatum*	Hook. & Arn.				CHAMISE	Native	Perennial	Shrub				
ROSACEAE	*Adenostoma*	*sparsifolium*	Torrey				RED SHANK	Native	Perennial	Tree				
ROSACEAE	*Cercocarpus*	*betuloides*	Torrey & A. Gray	var.	*betuloides*		MOUNTAIN-MAHOGANY	Native	Perennial	Shrub				
RUBIACEAE	*Galium*	*andrewsii*	A. Gray	ssp.	*andrewsii*		PHLOX-LEAF BEDSTRAW	Native	Perennial	Forb				
RUBIACEAE	*Galium*	*angustifolium*	Nutt.	ssp.	*angustifolium*		NARROW-LEAF BEDSTRAW	Native	Perennial	Subshrub				
SALICACEAE	*Salix*	*laevigata*	Bebb				RED WILLOW	Native	Perennial	Tree				
SCROPHULARIACEAE	*Castilleja*	*affinis*	Hook. & Arn.	ssp.	*affinis*		COAST PAINT-BRUSH	Native	Perennial	Forb				
SCROPHULARIACEAE	*Castilleja*	*exserta*	(A.A. Heller)Chuang & Heckard	ssp.	*exserta*		PURPLE OWL'S-CLOVER	Native	Annual	Forb				
SCROPHULARIACEAE	*Collinsia*	*heterophylla*	Buist				CHINESE HOUSES	Native	Annual	Forb				
SCROPHULARIACEAE	*Cordylanthus*	*rigidus*	(Benth.)Jepson				RIGID BIRD'S BEAK	Native	Annual	Forb				
SCROPHULARIACEAE	*Keckiella*	*cordifolia*	(Benth.)Straw				CLIMBING BUSH PENSTEMON	Native	Perennial	Shrub				
SCROPHULARIACEAE	*Mimulus*	*diffusus*	Grant				PALOMAR MONKEY FLOWER	Native	Annual	Forb	4.3	None	None	Included with *Mimulus palmeri* in Checklist of the Vascular Plants of San Diego County 3rd Ed.
SCROPHULARIACEAE	*Mimulus*	*pilosus*	(Benth.)S.Watson				DOWNY MONKEYFLOWER	Native	Annual	Forb				
SCROPHULARIACEAE	*Penstemon*	*spectabilis*	Thurber				SHOWY PENSTEMON	Native	Perennial	Forb				
SOLANACEAE	*Nicotiana*	*attenuata*	Torrey				COYOTE TOBACCO	Native	Annual	Forb				
SOLANACEAE	*Solanum*	*parishii*	A.A. Heller				PARISH'S NIGHTSHADE	Native	Perennial	Subshrub				
VIOLACEAE	*Viola*	*pedunculata*	Torrey & A. Gray				JOHNNY JUMP-UP	Native	Perennial	Forb				

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Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* 05/13/2006

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Mimulus diffusus*

Common Name: Palomar monkeyflower

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 40-50* Subsequent Visit? ☐ yes ☑ no
Is this an existing NDDB occurrence? _____ ☐ no ☑ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Genie Fleming
Address: 2431 29th St.
San Diego, CA 92104
E-mail Address: geniefleming@earthlink.net
Phone: (619) 282-3835

Plant Information

Phenology: 50 % vegetative 50 % flowering 0 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

Located near hilltop along southern property boundary approx 5-10m north of fence. See "Loc 2: MIDI" on accompanying map.

County: San Diego Landowner / Mgr.: _____
Quad Name: Descanso Elevation: _____
T 15S R 4E Sec 35 , SE ¼ of SE ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): topozone.com
T____ R ___ Sec ____ , ____ ¼ of _____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27 ☐ NAD83 ☐ WGS84 ☑ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☑
Coordinates: Easting/Longitude 116.5361 Northing/Latitude 32.8199

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Gentle to moderate north-facing slope (~23 degrees) gravelly to rocky soil. Area dominated by Adenostoma fasciculatum and Ceanothus greggii with Quercus berberidifolia, Trichostemma parishii, and Eiophyllum confertiflorum. Co-occurring herbs include Acourtia microcephala, Paeonia californica, and Lomatium sp.

Other rare taxa seen at THIS site on THIS date:

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Some development nearby.

Visible disturbances: Foot trails.

Threats: Trampling from possible immigrant traffic or other sources of foot traffic. Hole in fence near population location, and several foot trails evident throughout area.

Comments: *Count approximate as many individuals still small, not flowering, and not easily seen. Plants occurring in small, scattered clusters primarily under shade of shrubs.

Determination: *(check one or more, and fill in blanks)*
☑ Keyed (cite reference): Beauchamp 1986 & Hickman 1996
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☑
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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California Native Species Field Survey Form

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Scientific Name: *Mimulus diffusus*

Common Name: Palomar monkeyflower

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 40-50* Subsequent Visit? ☐ yes ☑ no
Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☑ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Genie Fleming
Address: 2431 29th St.
San Diego, CA 92104
E-mail Address: geniefleming@earthlink.net
Phone: (619) 282-3835

Plant Information

Phenology: 50 % vegetative 50 % flowering 0 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

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Quad Name: Descanso Elevation: _____
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T____ R ___ Sec ____ , ____ ¼ of _____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
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Other rare taxa seen at THIS site on THIS date:

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Current / surrounding land use: Some development nearby.

Visible disturbances: Foot trails.

Threats: Trampling from possible immigrant traffic or other sources of foot traffic. Hole in fence near population location, and several foot trails evident throughout area.

Comments: *Count approximate as many individuals still small, not flowering, and not easily seen. Plants occurring in small, scattered clusters primarily under shade of shrubs.

Determination: *(check one or more, and fill in blanks)*
☑ Keyed (cite reference): Beauchamp 1986 & Hickman 1996
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☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☑
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Date of Field Work *mm/dd/yyyy:* 05/13/2006

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Mimulus diffusus*

Common Name: Palomar monkeyflower

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 40-50* Subsequent Visit? ☐ yes ☑ no
Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☑ unk.

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Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☑
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

APPENDIX B
ANIMAL SPECIES DOCUMENTED ON THE 17-ACRE TOP OF THE PINES SITE

APPENDIX B

Animal Species Documented on 17-acre Top of the Pines Site

Pine Valley, San Diego County, California

December 2005 through July 2006

Species			Date						
			12/8	4/18	5/1	5/15	5/29	6/12	7/18
Butterflies									
Pale Swallowtail	*Papilio eurymedon*					1	2	1	1
Unidentified white	*Pontia / Pieris*							1	1
Sara Orangetip	*Anthocharis sara*					1			
Orange Sulphur	*Colias eurytheme*								5
Harford's Sulphur	*Colias harfordii*						1		7
Unidentified sulphur	*Colias* sp.				1	3		2	
Dainty Sulphur	*Nathalis iole*					1			
Gold-hunter's Hairstreak	*Satyrium auretorum*							2	
Hedgerow Hairstreak	*Satyrium saepium*							23	65
Marine Blue	*Leptotes marina*							1	6
Bernardino Square-Spotted Blue	*Euphilotes battoides bernardino*							22	
Acmon Blue	*Plebejus acmon*				3	9	7	12	35
California Sister	*Adelpha bredowii*							6	
Propertius Duskywing	*Erynnis propertius*					1			
Unidentified duskywing	*Erynnis* sp.				2			1	
Reptiles									
Western Whiptail	*Cnemidophorus tigris*					1			
Striped Racer	*Masticophis lateralis*						1		
Gopher Snake	*Pituophis melanoleucus*			1	1				
Birds									
Turkey Vulture	*Cathartes aura*	TUVU		3			1		
Cooper's Hawk	*Accipiter cooperii*	COHA							1
Red-shouldered Hawk	*Buteo lineatus*	RSHA	X	X		X	X	X	
Red-tailed Hawk	*Buteo jamaicensis*	RTHA		1					
Mountain Quail	*Oreortyx pictus*	MOUQ			X				
Band-tailed Pigeon	*Columba fasciata*	BTPI			1			X	2

APPENDIX B

Animal Species Documented on 17-acre Top of the Pines Site

Pine Valley, San Diego County, California

December 2005 through July 2006

Species			Date						
			12/8	4/18	5/1	5/15	5/29	6/12	7/18
			12/8	4/18	5/1	5/15	5/29	6/12	7/18
Mourning Dove	*Zenaida macroura*	MODO	X	3	2	X	1	4	1
Vaux's Swift	*Chaetura vauxi*	VASW		6					
White-throated Swift	*Aeronautes saxitalis*	WTSW						1	
Anna's Hummingbird	*Calypte anna*	ANHU	1	4	5	2	3		4
Acorn Woodpecker	*Melanerpes formicivorus*	ACWO		X	X	X	X		
Nuttall's Woodpecker	*Picoides nuttallii*	NUWO		1		1			1
Northern Flicker	*Colaptes cafer*	NOFL		X			1		1
Western Wood-pewee	*Contopus sordidulus*	WEWP			1				
Willow Flycatcher	*Empidonax traillii*	WIFL					1		
Ash-throated Flycatcher	*Myiarchus cinerascens*	ATFL		2	2	2	2	1	4
Western Kingbird	*Tyrannus verticalis*	WEKI					1		
Hutton's Vireo	*Vireo huttoni*	HUVI	2						
Steller's Jay	*Cyanocitta stelleri*	STJA	X	X		X	X	X	
Western Scrub-jay	*Aphelocoma californica*	WESJ	6	7	6	5	5	4	2
American Crow	*Corvus brachyrhynchos*	AMCR	X	1	1	3	3	X	4
Common Raven	*Corvus corax*	CORA	X	2	1	X	2	1	X
Violet-green Swallow	*Tachycineta thalassina*	VGSW		X					
Cliff Swallow	*Hirundo pyrrhonota*	CLSW		20	2	2	3	1	
Mountain Chickadee	*Poecile gambeli*	MOCH				X		X	
Oak Titmouse	*Baeolophus inornatus*	OATI	2	2	2	X		X	2
Bushtit	*Psaltriparus minimus*	BUSH	50	4	4	2		15	15
White-breasted Nuthatch	*Sitta carolinensis*	WBNU	1	X	1	X	X		
Bewick's Wren	*Thryomanes bewickii*	BEWR	1	2	3	3	1	1	3
Ruby-crowned Kinglet	*Regulus calendula*	RCKI	4	1					
Blue-gray Gnatcatcher	*Polioptila caerulea*	BGGN		2					
Western Bluebird	*Sialia mexicana*	WEBL	4	X					1
Hermit Thrush	*Catharus guttatus*	HETH	1						
American Robin	*Turdus migratorius*	AMRO					X		
Wrentit	*Chamaea fasciata*	WREN	2	6	5	3	4	4	4
California Thrasher	*Toxostoma redivivum*	CATH	1	1	1	1	1	1	

APPENDIX B

Animal Species Documented on 17-acre Top of the Pines Site

Pine Valley, San Diego County, California

December 2005 through July 2006

			Date						
Species			**12/8**	**4/18**	**5/1**	**5/15**	**5/29**	**6/12**	**7/18**
European Starling	*Sturnus vulgaris*	EUST				X			
Nashville Warbler	*Vermivora ruficapilla*	NAWA		1					
Yellow-rumped Warbler	*Dendroica coronata*	YRWA	2						
Black-throated Gray Warbler	*Dendroica nigrescens*	BTYW		2					
Western Tanager	*Piranga ludoviciana*	WETA					X		
Spotted Towhee	*Pipilo maculatus*	SPTO	4	3	3	4	5	6	1
California Towhee	*Pipilo crissalis*	CALT	1	2	2	3	3	2	
			12/8	**4/18**	**5/1**	**5/15**	**5/29**	**6/12**	**7/18**
Black-chinned Sparrow	*Spizella atrogularis*	BCSP						2	
White-crowned Sparrow	*Zonotrichia leucophrys*	WCSP	15						
Dark-eyed Junco	*Junco hyemalis*	DEJU	15						
Black-headed Grosbeak	*Pheucticus melanocephalus*	BHGR		1	1	X	2	4	1
Bullock's Oriole	*Icterus galbula*	BUOR				3	X		
House Finch	*Carpodacus mexicanus*	HOFI	5	X	2	5	4	3	5
Lesser Goldfinch	*Carduelis psaltria*	LEGO	5	10	9	4	5	8	4
Lawrence's Goldfinch	*Carduelis lawrencei*	LAGO	1						
Mammals									
Desert Cottontail	*Sylvilagus auduboni*			2	1	2	1	3	
California Ground Squirrel	*Spermophilus beecheyi*							1	
Desert Woodrat	*Neotoma lepida*		M	M	M	M	M	M	M
Dusky-footed Woodrat	*Neotoma fuscipes*		M	M	M	M	M	M	M
Note: Daily counts provided for species occurring within the site and immediate vicinity.									
X = Bird species detected just beyond site boundaries.									
M = Middens found only.									

APPENDIX C
QUINO CHECKERSPOT BUTTERFLY PROTOCOL SURVEY REPORT

REPORT ON FOCUSED SURVEY
FOR THE QUINO CHECKERSPOT

ON
THE "TOP OF THE PINES" SITE
PINE VALLEY, SAN DIEGO COUNTY, CALIFORNIA

John C. Lovio
24 August, 2006

Introduction

A survey for the federally endangered Quino checkerspot butterfly (*Euphydrias editha quino*) (hereafter, Quino) was required by the County of San Diego for the 16.82-acre "Top of the Pines" site (Tentative Parcel Map 20951) in the unincorporated community of Pine Valley. The site is proposed for division into four parcels and development of as many single-family homes. A survey was conducted by John C. Lovio under section 10(a) recovery permit # TE-065741-0, by sub-contract to TEC, Incorporated, of Santa Barbara.

Survey Area Description

Survey for Quino was conducted on appropriate portions of the proposed development site, which is a 16.82-acre, somewhat irregular, east – west oriented rectangle comprising nearly all of the north half of the SE quarter of the SE quarter of section 35, Township 15 South, Range 4 East, San Bernardino Baseline and Meridian (Figure 1). It is bordered to the south by the easement of Interstate 8, to the east by Pine Valley Road, and to the north and west by private land with sparse residential development in a matrix of natural vegetation. The site is currently undeveloped, with the exception of a curving, mostly unpaved access road that runs through from east to west.

The site elevation ranges from 3750 to 3950 feet above sea level. Site topography consists of two low hills in the western two-thirds and a terrace in the eastern third. Aspects are generally south, although some north-facing slopes occur along the northern site edge. The majority of the site drains to the south and east and it includes part of the watershed of a short, but deep gully that runs generally eastward through the southern portion of the site and is culverted to the east beneath Pine Valley Road. No extensive rock outcrops occur on the site.

The location and elevation of Top of the Pines are transitional between the coastal zone and mountain regions of San Diego County. The distribution of vegetation types on the site is shown in Figure 2. Chaparral vegetation, which accounts for 86% of the site, is

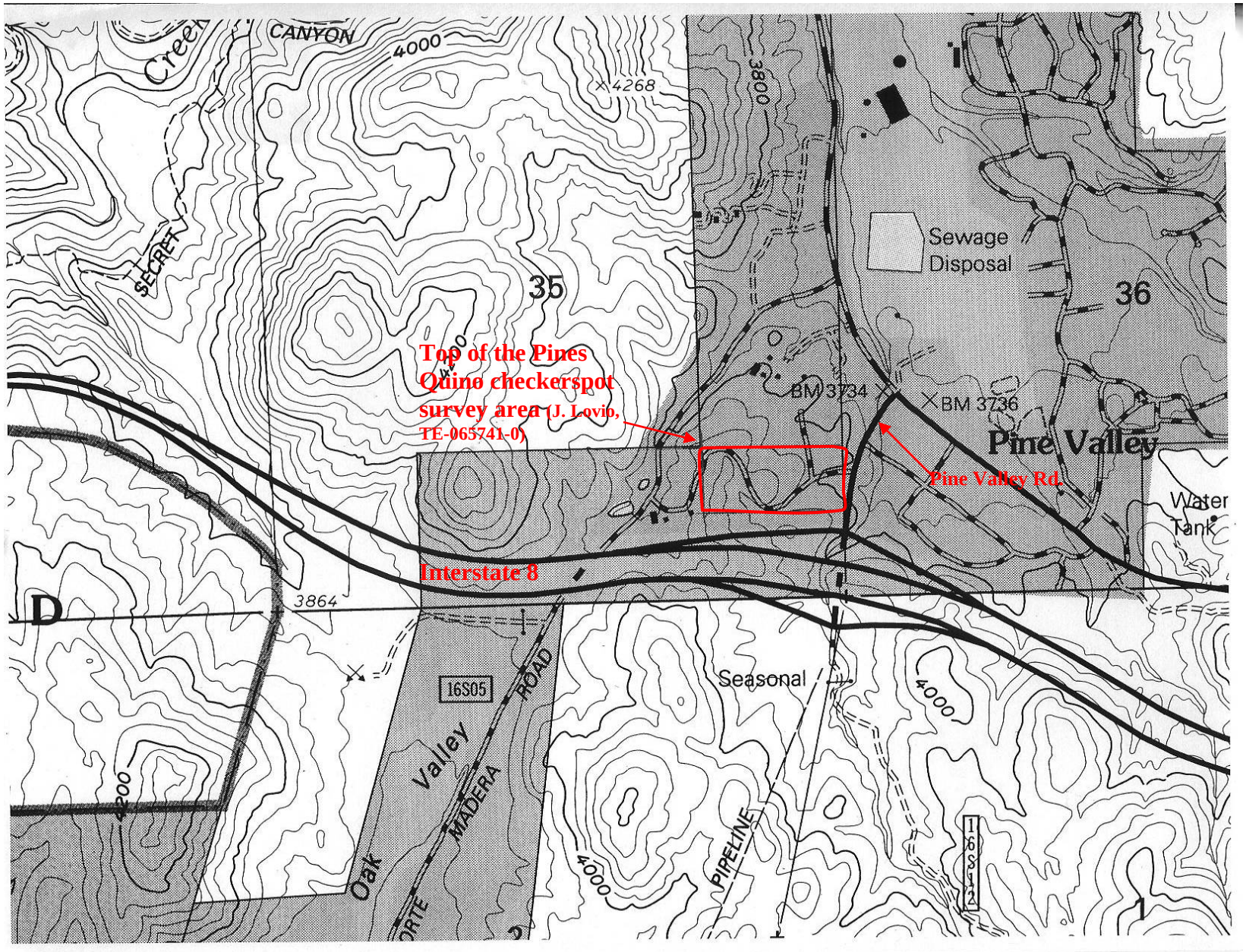

Figure 1. Quino Checkerspot Survey Area

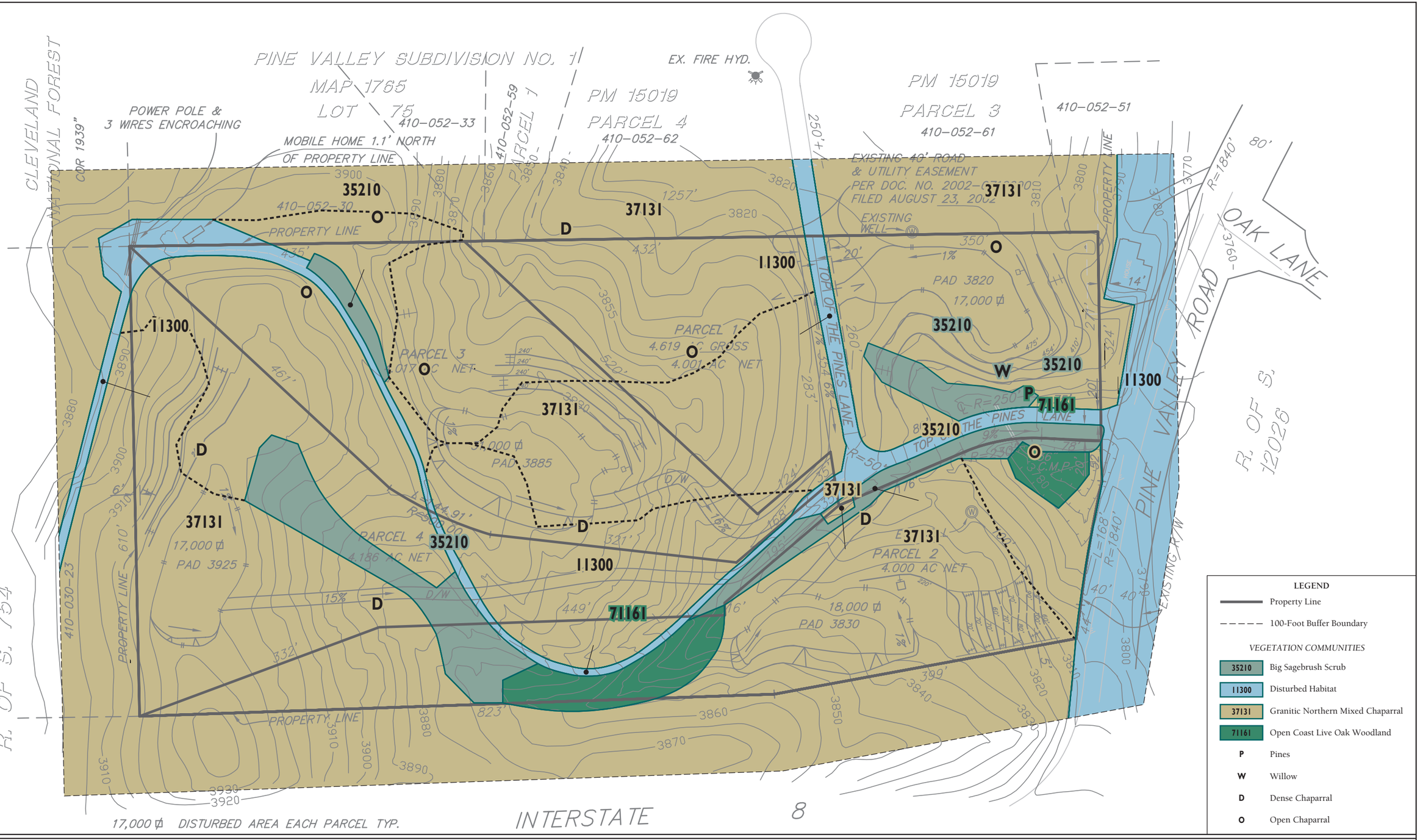

Figure 2
Vegetation Map for Top of the Pines Project

correspondingly transitional and can best be categorized as Granitic Northern Mixed Chaparral (Oberbauer 1996 adaptation of Holland 1986), although it includes several distinctly montane elements.

The dominant chaparral shrub species are chamise (*Adenostoma fasciculatum*), cupleaf ceanothus (*Ceanothus greggii*), and scrub oak (*Quercus berberidifolia*). Other chaparral shrub elements that occur in lower proportion on the site include chaparral whitethorn (*Ceanothus leucodermis*), red shank (*Adenostoma sparsifolium*), manzanita (*Arctostaphylos glauca* and *A. glandulosa*), and mountain mahogany (*Cercocarpus betuloides*).

Chaparral vegetation on Top of the Pines consists of approximately equal proportions of two phases: relatively low (1 to 2 meters) and open (70 to 90% shrub cover) versus relatively tall (1.5 to 3 meters) and dense (90 to 100% cover). This structural difference does not appear to correspond to shrub species composition, although the low, open areas tend to support a higher proportion of chamise. The lower shrub structure also occurs irrespective of topography and may reflect vegetation recovery from disturbances in past decades.

The remainder of the site vegetation comprises smaller, discrete areas of big sagebrush scrub and coast live oak woodland (Figure 2). The sagebrush scrub, which accounts for approximately 7% of the site area (1.2 acres), is strongly dominated by big sagebrush (*Artemisia tridentata*) and occurs on relatively gradual terrain or along the road. The structure of this vegetation is comparable to the open phase chaparral in terms of density, but is lower in stature (Figure 3). Former disturbance may be a factor in the occurrence of this vegetation type on the site, as its distribution also corresponds to areas of obviously disrupted soil and the greatest concentrations of non-native weed species, such black mustard (*Brassica nigra*). Further evidence of the association of big sagebrush with past disturbance is the concentration of this species along the road shoulder. The areas of big sagebrush scrub also support a succulent element consisting of prickly pear cactus (*Opuntia sp.*) and our lord's candle (*Yucca whipplei*).

Figure 3. Stand of big sagebrush scrub surrounded by relatively open granitic mixed chaparral.

Moderately dense Coast Live Oak Woodland (Oberbauer 1996 adaptation of Holland 1986) with small individuals of Jeffrey pine (*Pinus jeffreyi*) occurs in two small stands along the gully and occupies approximately 4% of the site.

Methods

An assessment of potential Quino habitat was conducted at Top of the Pines on 8 December, 2005. It was determined that approximately 8 acres (48% of the site) meet the criteria for survey in terms of vegetation density. This portion comprises the open chaparral, all of the big sagebrush scrub, and some of the disturbed road edges. The remainder of the site consists of dense chaparral and oak woodland with continuous or nearly continuous canopy (Figure 2).

The potential Quino habitat on the site was thoroughly surveyed on foot for adults and larval host plants on each of 5 visits between 18 April and 12 June (Table1). Survey visits were conducted under optimal weather conditions for flight activity by adult butterflies (Table 1). Numbers of all butterfly species and the presence of potential nectar sources on the survey area were recorded on each visit. General biological assessment and inventory were conducted on the same days as the Quino surveys. An additional July visit was conducted as part of the general inventory.

Table 1. Quino checkerspot survey dates and conditions.

Date	Times	Weather
18 April	10:00 – 13:30	60° to 67° F, clear, wind gusty, 3-10 mph, NE
1 May	10:30 – 12:30	82° to 79° F, clear w/ 20% haze, wind, 0-5 mph, W to SW
15 May	10:15 – 13:20	81° to 80° F, 90 to 80% high clouds, wind 1mph, E, to 3-5 mph, W
29 May	08:45 – 11:00	68° to 74° F, clear, wind 2-5 mph, W
12 June	11:30 – 15:00	79° to 80° F, clear, wind gusty, 3-10 mph, SW
18 July	10:15 – 13:45	93° to 90° F, 10 to 50% clouds, wind gusty, 5-10 mph, SE to 5-8 mph, W

Quino Survey Schedule

Quino survey began on 18 April (Table 1), in response to fleetingly suitable survey conditions (cloud cover and temperature) and accounting for the phenology of annual vegetation at higher elevations. Table 1 indicates that Quino survey visits were conducted at approximately bi-weekly intervals, which represents a departure from U.S. Fish and Wildlife Service protocol. This survey pattern was adopted in response to unusual weather patterns during the spring of 2006 and in an attempt to capture optimal butterfly flight and reproductive conditions within the survey period.

Rainfall Season

A description of the aberrant weather conditions and corresponding vegetation phenology during the winter and spring of 2006 is important for providing a context for the observed Quino survey schedule.

The timing of Quino flight activity and reproduction is dependent on the timing of winter rains (Mattoni et al. 1997). In typical years, rainfall induces the annual larval host plants to achieve vigorous growth and blooming by late winter and is believed to also stimulate the emergence of diapause (winter-dormant) larvae (Faulkner and Klein 2003). Adults conspicuously fly and reproduce during a four to eight week period between February and April (Mattoni et al. 1997), with the peak of activity typically occurring in March. Unusually high and/or prolonged rainfall seasons may result in adult flight periods beginning as early as January and ending as late as May (Faulkner and Klein 2003). Adult activity is further complicated by elevation, which, due to associated lower temperatures and often greater precipitation at higher elevations, can serve to delay both plant and butterfly phenology relative to lower areas. An examination of adult Quino activity data from the U.S. Fish and Wildlife Service website suggests that the phenology of higher elevation populations is delayed by approximately two weeks from lower elevation populations.

Larval host plants are defined as primary and secondary. The former are species used by female Quino for oviposition (egg-laying) and upon which newly hatched larvae feed. The latter are sought by dispersing larvae for continued sustenance as primary host plants dry and become unavailable. The most typically utilized primary larval host plant, *Plantago erecta*, is varied in its response to rainfall, exhibiting successive waves of germination throughout the rainy season. Following cessation of the majority of rain in early to mid-spring, *P. erecta* quickly forms seed and dries, rendering it unsuitable for

oviposition by female Quino. At this point, larvae seek longer-lived secondary host species, enter diapause, or die.

The 2005 – 2006 rainfall season began normally with sporadic rain in fall and early winter, but persistent drought conditions associated with periodically high temperatures commenced in mid-December and extended for approximately 60 days. By mid-February, shrub vegetation was unusually dry and annual plant growth was significantly stunted. In many areas where *P. erecta* was able to germinate in the early season, plants achieved a maximum height of approximately 2 centimeters and exhibited atypical stunted, basal flower shoots.

Significant and prolonged rain, associated with intermittently low temperatures, began at the very end of February and continued intermittently throughout the month of May. These conditions were exacerbated by elevation: mountain areas above approximately 3000 feet were under significant snow cover during the second week of March, a condition that persisted at higher elevations for weeks thereafter.

The lag effect caused by the response of vegetation to the sudden onset of rain resulted in the commencement of significant germination of annual herbs and grasses in mid to late March and peak growth and blooming by mid to late April, approximately 60 days later than normal. As mentioned above, this period also experienced periodic cool, cloudy, and rainy conditions.

In summary, the 2006 Quino activity period was severely curtailed by initial drought, followed by regular periods of unseasonably wintry conditions.

Results and Discussion

Between 13 and 15 species of butterfly species were detected on the Top of the Pines site during Quino surveys and general biological inventory in 2006. Butterfly species and numbers are presented in Table 2. Blooming woody and herbaceous plant species present during survey visits and their relative abundances are given in Table 3 as an index of potential nectar availability.

Due to the unseasonable, winter-like weather during the spring, the 18 April visit occurred early in the phenological development of insects and annual plants at this elevation. Herbaceous plants had only recently germinated and very few were in bloom. No butterflies were found. Vegetation phenology had advanced slightly by early May, with minimal development and flowering of herbaceous species; an exception was the profuse blooming of cupleaf ceanothus. This and other dominant woody species maintained peak bloom until mid-May, whereas herbaceous and semi-woody vegetation reached peak bloom during the latter half of May (Table 3). Butterfly diversity and collective abundance was fairly stable through May, but increased notably in the summer months (Table 2). This phenology suggests that, if Quino do occur in the Pine Valley area, conditions during the typical flight period in 2006 were not conducive to activity by this species.

Table 2. Butterflies detected on survey dates.

	Dates					
Species	**4/18**	**5/1**	**5/15**	**5/29**	**6/12**	**7/18**
Pale Swallowtail *Papilio eurymedon*	0	0	1	2	1	1
Unidentified white *Pontia / Pieris*	0	0	0	0	1	1
Sara Orangetip *Anthocharis sara*	0	0	1	0	0	0
Orange Sulphur *Colias eurytheme*	0	0	0	0	0	5
Harford's Sulphur *Colias harfordii*	0	0	0	1	0	7
Unidentified sulphur *Colias* sp.	0	1	3	0	2	0
Dainty Sulphur *Nathalis iole*	0	0	1	0	0	0
Gold-hunter's Hairstreak *Satyrium auretorum*	0	0	0	0	2	0
Hedgerow Hairstreak *Satyrium saepium*	0	0	0	0	23	65
Marine Blue *Leptotes marina*	0	0	0	0	1	6
Bernardino Square-Spotted Blue *Euphilotes battoides bernardino*	0	0	0	0	22	0
Acmon Blue *Plebejus acmon*	0	3	9	7	12	35
California Sister *Adelpha bredowii*	0	0	0	0	6	0
Propertius Duskywing *Erynnis propertius*	0	0	1	0	0	0
Unidentified duskywing *Erynnis* sp.	0	2	0	0	1	0
Total Butterflies	0	6	16	10	71	120

No Quino checkerspots were found on the Top of the Pines site. The most commonly used primary host plant, *Plantago erecta*, was also not found on the site. However, *Cordylanthus rigidus*, an alternate primary larval host plant for Quino, and *Castilleja exserta*, a secondary host plant, were found in low abundance during botanical surveys of Top of the Pines in May and June. *C. rigidus* occurred as scattered individuals in open areas within chaparral, but was late in germinating and exhibited little to no flowering in 2006 due to the unusual rainfall pattern (G. Fleming, pers. comm.). *C. exserta* occurred as very few individuals in areas of old disturbance (G. Fleming, pers. comm.).

Apart from the unusual constraints on Quino flight and reproductive activity in 2006, the Top of the Pines site does not appear to provide the proper suite of characteristics to constitute suitable habitat for this species. Open vegetation accounts for a relatively small proportion of the site and occurs in small, disjunct areas. The herbaceous component of the vegetation does not appear to include significant stands of primary and

secondary host plants. One species of alternate primary host plant and one secondary host species were found on the site, but were scarce and highly dispersed.

Table 3. Blooming plant species (potential butterfly nectar sources) by survey date.

Species	4/18	5/1	5/15	5/29	6/12	7/18
Manzanita (*Arctostaphylos* sp.)	M					
Black mustard (*Brassica nigra*)*			M	M	M	M
Coast paint-brush (*Castilleja affinis*)			M	M	M	M
Cupleaf Ceanothus (*Ceanothus greggii*)	L	H	H			
Chaparral whitethorn (*Ceanothus leucodermis*)	M	M	M	L		
Purple rock rose (*Cistus creticus*)*				L		
Chinese houses (*Collinsia heterophylla*)			L			
California buckwheat (*Eriogonum fasciculatum*)					L	H
Golden yarrow (*Eriophyllum confertiflorum*)			M	H	H	
Red-stemmed filaree *(Erodium cicutarium*)*			L			
Slender sunflower (*Helianthus gracilentus*)						L
Summer snow (*Linanthus floribundus*)			L			
California Peony (*Paeonia californica*)			L	L		
Beardtongue (*Penstemon heterophyllus*)						L
Showy penstemon (*Penstemon spectabilis*)					L	
Popcorn flower (*Plagiobothrys collinus*)		L	M	M	L	L
Coast live oak (*Quercus agrifolia*)				M		
Scrub-oak (*Quercus berberidifolia*)			H	M		
Basket bush (*Rhus trilobata*)		L	L			
Chia (*Salvia columbariae*)			L			
Mexican elderberry (*Sambucus mexicana*)					L	
Mountain bluecurls (*Trichostema parishii*)			L	L	M	
Johnny jump-up (*Viola pedunculata*)			L			
Our Lord's candle (*Yucca whipplei*)	M					

L = low abundance; M = moderate abundance; H = high abundance

* = Non-native species

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